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SmartDesk: Secure Employee Tracking, Performance Evaluation, and Collaboration System

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Abstract: ***SmartDesk is an AI-powered system that integrates employee monitoring, performance evaluation, and intelligent hiring into a unified platform. The system enables real-time activity tracking, credit-based performance scoring, secure data management, and automated decision making. It also includes features such as communication tools, task management, and AI driven candidate recommendations to streamline recruitment processes. By combining workforce management and data driven analytics, SmartDesk improves productivity, transparency, and operational efficiency. The system is developed using TypeScript for the frontend and Supabase for backend services including database, authentication, and real-time synchronization. It is designed for IT companies, startups, and enterprises to support scalable and secure employee management.***

Keywords: Employee Monitoring, Performance Evaluation, Smart Hiring, TypeScript, Supabase, Workforce Management, HR Analytics

I. INTRODUCTION

The rapid growth of digital workplaces has created a need for efficient systems to monitor employee activities and improve hiring processes. Traditional employee management systems rely heavily on manual tracking, which is time consuming and often inaccurate. These systems lack real-time insights and fail to provide intelligent decision support. This paper presents SmartDesk, an AI-powered integrated platform designed for employee activity tracking, performance evaluation, and smart hiring. The system uses TypeScript for developing an interactive frontend and Supabase for backend services such as database management, authentication, and real-time data processing. SmartDesk enables organizations to monitor employee attendance, track tasks, evaluate performance, and make data driven hiring decisions. By integrating multiple functionalities into a single platform, the system improves efficiency, reduces manual effort, and enhances overall productivity.

II. RELATED WORK

Various research studies have been conducted in the field of employee monitoring and intelligent hiring systems. Traditional employee management systems mainly focus on attendance tracking and manual performance evaluation, which lack real-time insights and automation. Recent advancements in Artificial Intelligence and Machine Learning have introduced smart solutions for workforce analytics. AI-based systems are capable of analyzing employee performance, predicting productivity, and assisting in recruitment processes. Several platforms use data-driven approaches to evaluate employee behavior and generate performance reports.

However, most existing systems focus on either employee monitoring or hiring separately. They lack integration of multiple functionalities such as real-time tracking, performance evaluation, communication, and hiring recommendations in a single platform. The proposed SmartDesk system addresses these limitations by integrating employee monitoring, performance analysis, and intelligent hiring into a unified system, thereby improving efficiency, accuracy, and decision-making in organizations.

III. SYSTEM DESIGN AND IMPLEMENTATION

A. System Design

The SmartDesk system is designed as desktop based platform that integrates employee monitoring, performance evaluation, and smart hiring functionalities. The frontend is developed using TypeScript, which provides a dynamic and responsive user interface. The backend is implemented using Supabase, which offers real-time database services, authentication, and storage.The system follows a modular architecture consisting of multiple components such as employee management, activity tracking, performance analysis, and hiring recommendation. Each module interacts with the database through secure APIs, ensuring smooth data flow and efficient processing.

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B. System Integrity and Performance:

The system ensures data integrity and security through authentication and access control mechanisms provided by Supabase. Only authorized users such as administrators and employees can access specific functionalities.Performance is optimized by using real-time data synchronization, which allows instant updates in employee activities and dashboard analytics. The system is scalable and capable of handling increasing user data efficiently, making it suitable for real world organizational use.

C. System Modules

The SmartDesk system is divided into multiple functional modules to ensure efficient operation and easy management.

1) Employee Monitoring Module: This module tracks employee login time, working hours, and task completion status. It continuously monitors user activity and records data for performance analysis. This helps organizations maintain accurate attendance and productivity records.

2) Performance Evaluation Module: This module analyzes employee activities using predefined parameters such as task completion rate, consistency, and efficiency. It generates performance scores and reports, enabling managers to evaluate employees objectively and identify areas of improvement.

3) Hiring Recommendation Module: This module evaluates candidate profiles based on skills, qualifications, and job requirements. It uses a rule-based approach to match candidates with suitable job roles, assisting recruiters in making faster and more accurate hiring decisions.

4) Dashboard Module: The dashboard provides a visual interface for administrators and managers. It displays employee performance metrics, activity reports, and hiring analytics in graphical form, making it easier to interpret data and monitor system operations.

5) Security and Authentication Module: This module ensures secure access to the system using authentication mechanisms provided by Supabase. It restricts unauthorized access and protects sensitive employee and organizational data.

IV. SYSTEM ARCHITECTURE

The SmartDesk system follows a client server architecture designed for scalability and real-time performance. The frontend is developed using TypeScript, which provides a responsive and interactive user interface for employees and administrators. The backend is powered by Supabase, which manages database operations, authentication, and real-time data synchronization. All data related to employee activities, tasks, and candidate information is stored securely in a PostgreSQL database. The system is divided into multiple modules including employee monitoring, performance evaluation, hiring recommendation, and dashboard visualization. These modules communicate through APIs to ensure efficient data flow and seamless operation. The architecture ensures high performance, data security, and scalability, making it suitable for modern organizations.

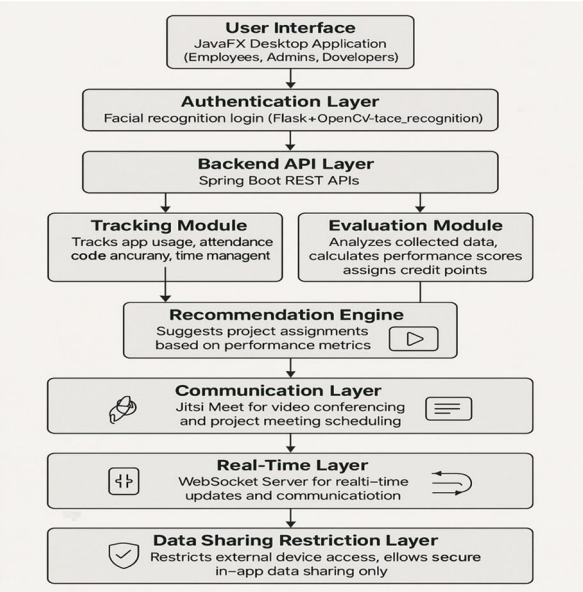


Fig. 1. System Architecture of SmartDesk

A. Frontend Architecture

The frontend of SmartDesk is developed using TypeScript, which enables the creation of a dynamic and user-friendly interface. It allows employees and administrators to interact with the system, manage tasks, and view performance data through dashboards.

B. Backend Architecture

The backend is implemented using Supabase, which provides database management, authentication, and real-time data synchronization. It ensures secure storage of employee data and efficient communication between system components.

C. Data Flow and Module Interaction

The system modules such as employee monitoring, performance evaluation, and hiring recommendation interact through APIs. Data flows from the frontend to the backend, where it is processed and stored, and then returned to the user interface in real time.This architecture ensures smooth communication, high performance, and reliable system operation.

V. RESULTS AND DISCUSSION

The SmartDesk system provides significant improvements in employee management and hiring processes. By implementing real-time activity tracking, the system ensures accurate monitoring of employee performance. The performance evaluation module generates reliable reports, helping organizations make data-driven decisions.

The hiring recommendation module reduces manual effort by automatically matching candidates with suitable job roles, improving recruitment efficiency. The integration of multiple functionalities into a single platform reduces system complexity and enhances usability.

Overall, the system improves productivity, transparency, and operational efficiency. It provides a scalable and secure solution for modern organizations, especially in IT companies and startups where efficient workforce management is essential.

The system also enhances decision-making by providing real-time analytics and insights, enabling organizations to identify performance trends and optimize workforce efficiency effectively.

The system demonstrates improved efficiency compared to traditional systems by reducing manual effort and increasing accuracy.

VI. CONCLUSION

This paper presents SmartDesk, an AI-powered system designed for employee monitoring, performance evaluation, and intelligent hiring. The system integrates multiple functionalities into a single platform, enabling real-time tracking, data-driven decision-making, and efficient workforce management.

By using technologies such as TypeScript and Supabase, the system ensures scalability, security, and high performance. SmartDesk reduces manual effort, improves accuracy, and enhances organizational productivity.

In the future, the system can be further enhanced by incorporating advanced machine learning algorithms for predictive analytics, facial recognition for authentication, and automated workflow management to provide a more intelligent and fully automated solution.

Thus, SmartDesk serves as an effective solution for modern workforce management challenges.

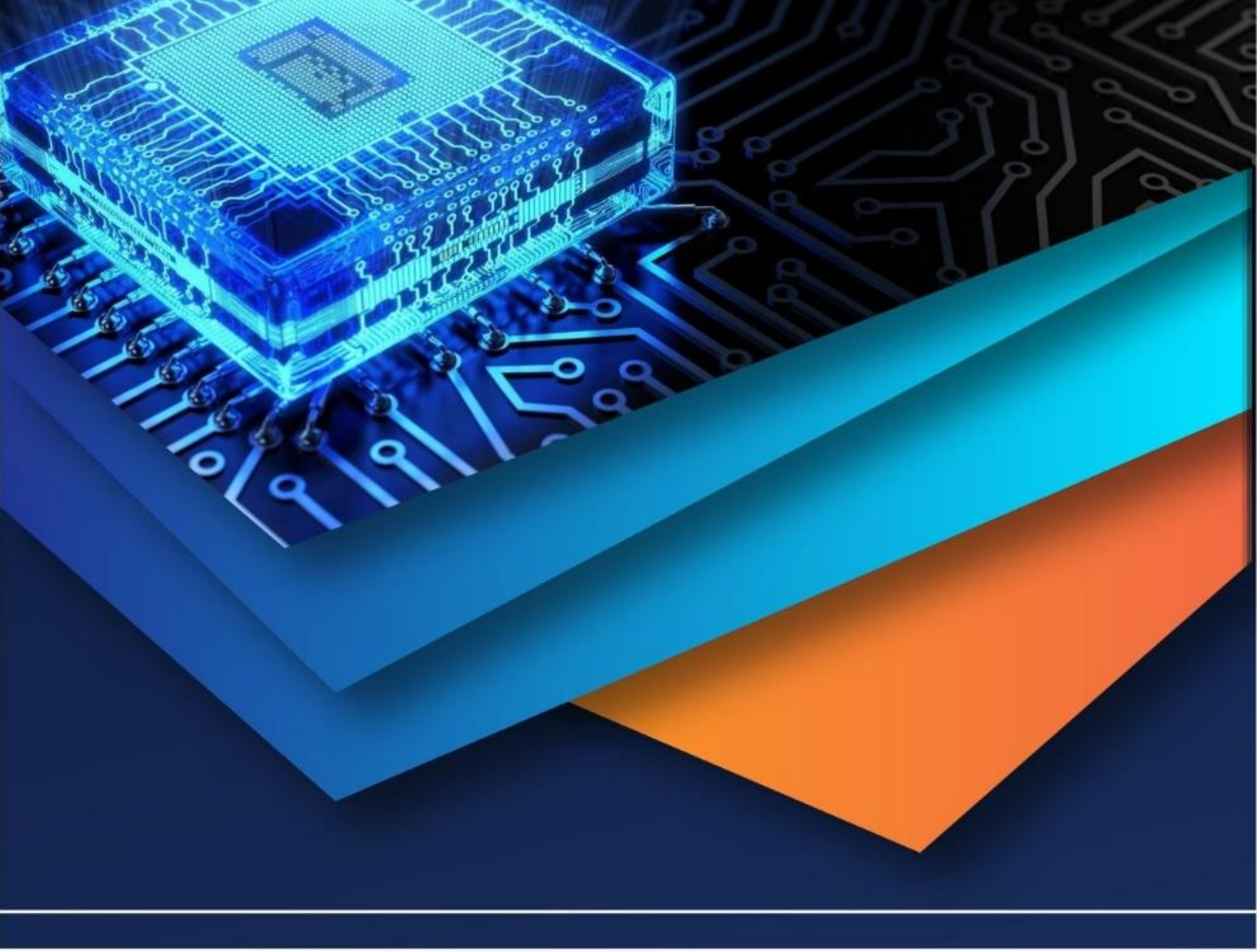
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